

DEPOSITION OF INSULATING FILM FOR SEMICONDUCTOR DEVICE

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Abstract

PURPOSE: To improve the corrosion resistance and step coverage of an insulating film by a method wherein a silicon oxide film is deposited, then, a film, which is continuously made to make a transition from the silicon oxide film to a silicon nitride film, is deposited and a silicon nitride film is deposited thereon.

CONSTITUTION: In the case of a silicon nitride film, nitrogen gas N, which is one part of reaction gas, or in the case of a silicon oxide film, oxygen gas O, which is one part of the reaction gas, is introduced into a plasma producing chamber 11 via a gas introducing tube 14, coils 30 for cyclotron resonance are arranged on the periphery of the chamber 11 and a D.C. magnetic field of a prescribed intensity is generated. After the silicon oxide film is deposited, the flow rate of the oxygen gas is decreased without changing the flow rate of silicon gas and the nitrogen gas is added and the flow rate of the nitrogen gas is increased. For example, the oxygen gas is continuously changed from 32cc/min to 0cc/min. In respect to the nitrogen gas it is continuously changed from 0cc/min to 300cc/min. Thereby, a high-practicability protective film can be obtained to an integrated circuit device.

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